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Meta-Analysis on Mediated Contact and Prejudice

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This paper presents a meta-analysis of 79 cases (N = 21,857) testing the effectiveness of mediated intergroup contact on prejudice. Positive mediated contact decreased (r = −.23; 95% CI, −.29 to −.17), whereas negative mediated contact increased prejudicial attitudes (r = .31; 95% CI, .24 to .38) and intergroup anxiety and empathy were both significant mediators of these relationships. Furthermore, the data revealed no significant differences between parasocial and vicarious effects, positive and negative mediated-contact effects, or the effects of the duration of mediated-contact stimulus exposure on prejudice. However, the data did reveal experiments to have stronger effects than survey research. These and other results are discussed along with implications, limitations, and future research directions.

Keywords: Mediated Contact, Parasocial, Vicarious, Prejudice, Intergroup Anxiety, Empathy

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Reducing prejudice has been an issue of longstanding importance to social scientists, with Allport's (1954) contact hypothesis being perhaps the most influential work on the subject. Allport argued that under certain conditions (e.g., cooperation), interpersonal contact between people from different social groups could diminish intergroup prejudice. Meta-analyses of contact studies have supported this relationship (Pettigrew & Tropp, 2006, 2008, 2011), and subsequent research extended its theoretical boundaries to include *mediated contact* (i.e., contact with an outgroup through various forms of media; Park, 2012), with two distinct types of mediated contact emerging in the literature: vicarious contact and parasocial contact. *Vicarious mediated contact* (hereafter referred to as vicarious contact) occurs when a viewer observes an ingroup member interacting with an outgroup member (e.g., Harwood, Qadar, & Chen, 2016; Joyce & Harwood, 2014). *Parasocial contact* shifts the focus of the intergroup encounter away from the ingroup member and instead focuses on viewers' connections with outgroup members via mediated contact (e.g., Schiappa, Gregg, & Hewes, 2005).

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Allport's (1954) contact hypothesis contends that positive interaction with an outgroup member motivates the reevaluation of the outgroup as a whole. Should an individual hold negative attitudes toward a group but have a positive personal encounter with someone from the group, a discrepancy arises between negative perceptions and face-to-face interactions (Pettigrew, 1998). Research on intergroup contact finds that positive encounters (i.e., friendly and pleasant interactions) should motivate interactants to cognitively reassess negative group attributes in favor of more positive ones (Rothbart & John, 1985).

Although not conducted under the mediated-contact umbrella, media scholars were the first to study how television portrayals can reinforce stereotypes (e.g., Gerbner, 1972; Vidmar & Rokeach, 1976). As contact research expanded to mediated contact, other researchers followed their lead by studying how media depictions can reinforce negative stereotypes and, therefore, increase rather than decrease prejudicial attitudes. The media-effects literature finds that non-dominant groups are often depicted negatively in American media, and such portrayals are related to increased stereotype endorsement (Mastro, Behm-Morawitz, & Kopacz, 2008; Mastro, Behm-Morawitz, & Ortiz, 2007) and outgroup prejudice (Saleem & Anderson, 2013), as well as decreased support for government programs benefiting marginalized groups (Ramasubramanian, 2011). Overall, research evidence supports the notion that negatively valenced contact with outgroups in the media has a deleterious effect on viewer attitudes (Atwell Seate, 2017).

Despite over 20 years of mediated contact research and a number of excellent narrative reviews (Atwell Seate, 2017; Harwood, 2010; Harwood, Hewstone, Amichai-Hamburger, & Tausch, 2013; Park, 2012), several questions remain about mediated-contact effects. One question pertains to the overall effect estimate for mediated contact, which has not been assessed since mediated contact was excluded from the meta-analyses on direct contact (Pettigrew & Tropp, 2006, 2008, 2011) and the meta-analysis on extended contact (Zhou, Page-Gould, Aron, Moyer, & Hewstone, 2018). A second question concerns the potential mediators of mediated-contact effects—empathy and intergroup anxiety—that have been established as the mediators in direct contact but have not been assessed in a meta-analysis of mediated-contact effects. A third question involves potential moderators of mediated-contact effects. Testing whether vicarious effects are stronger than parasocial effects, whether negative-contact effects are stronger than positive-contact effects, and whether the duration of exposure enhances mediated-contact effects can inform theorizing about mediated contact.

The current meta-analysis

The effects of mediated contact on prejudicial attitudes

The majority of contact research focuses on the prejudice-reducing effects of positive-direct contact (for an overview, see Dovidio, Glick, & Rudman, 2005). A smaller portion of this research has focused on the harmful effects of negative contact

(e.g., Saleem, Yang, & Ramasubramanian, 2016). Negative-contact research found that negatively valenced encounters amplify prejudicial attitudes, similar to how positive contact improves attitudes (Paolini, Harwood, & Rubin, 2010). Conceptually, then, the valence of intergroup contact can range from positive to negative, with corresponding effects on outgroup evaluations ranging from more favorable to less favorable. Given these two types of mediated contact, the first hypothesis is:

> **H1:** (a) Positive mediated contact reduces prejudice and (b) negative mediated contact increases prejudice.

Mechanisms of prejudice reduction

In a meta-analysis testing the explanatory mechanisms of prejudice reduction as a result of direct contact, Pettigrew and Tropp (2008) confirmed intergroup anxiety and empathy as significant mediators of the relationship between contact and prejudice. Intergroup anxiety, defined as feelings of fear or worry that accompany a perceived or real interaction with an outgroup, has long been associated with a number of negative intergroup behaviors, including stereotype endorsement (Aberson & Gaffney, 2008), biased information processing (Stephan, Stephan, & Gudykunst, 1999), and heightened perception of an outgroup threat (Stephan & Stephan, 1985). Conversely, empathy, conceptualized as feelings of rapport, understanding, and sensitivity toward an outgroup, has been shown to decrease prejudice (e.g., Vescio, Sechrist, & Paolucci, 2003). Together, intergroup anxiety and empathy help explain the process of prejudice reduction stemming from direct contact.

In mediated contact, empathy and intergroup anxiety should serve a similar function. One explanation for this is that all contact research can be mapped onto the same *contact space*, a conceptual framework explicated by Harwood (2010) that contains the dimensions of involvement of self in the intergroup contact and the richness of self-outgroup experience (i.e., the number of channels and senses involved in contact). Harwood notes that empathy and intergroup anxiety are mediators of both face-to-face and mediated contact, which are also both high in self-involvement and richness of experience. Additionally, since humans mentally process mediated experiences in a similar manner to how they process interpersonal encounters, they tend to view and treat media characters as they would actual people (Kanazawa, 2002). In fact, the notion of the equivalence of *mediated life* and *real life* in terms of human cognitive and affective responses is the central tenet of some contemporary theorizing about the media (e.g., Reeves & Naas' [1996] media equation theory).

Furthermore, some scholars have suggested that the media may be ideally suited to demonstrate the intervening effects of empathy and intergroup anxiety in the contact-prejudice relationship, because mediated contact both informs viewers about outgroups and elicits affective responses about them. In addition, as Park (2012) noted, mediated contact is superior to direct contact with regard to its ability to mitigate intergroup anxiety: Because mediated intergroup contact frequently occurs when people feel a sense of relaxation and control of their environment (e.g., at

home watching a television show featuring outgroup characters), people should feel relatively less anxious about the intergroup contact and perceive it as less risky. Mediated contact is also conducive to facilitating empathy: As Zillmann (1994) argued, empathy is a core component of audiences' enjoyment of media, as viewers are more likely to enjoy media when they are immersed in stories and empathize with the experiences of characters.

For negative mediated contact, the same variables of empathy and intergroup anxiety should mediate the effects, but in the opposite direction. Being exposed to outgroup members portrayed in stereotypical and/or threatening ways facilitates the perception of an outgroup not only as different, but as different in an adverse way. Media scholars have extensively documented the prevalence of harmful depictions of outgroups, as well as their damaging effects on perceptions of those outgroups (e.g., Atwell Seate, 2017). When outgroup members are perceived as threatening, they cease to be individuals and instead become symbols of an unfavorable "them," which inhibits empathy (Harwood, 2017). This reasoning results in the following prediction:

> **H2:** The relationship between mediated contact and prejudice is mediated via (a) intergroup anxiety and (b) empathy.

Theoretical moderators

In addition to testing the mediating influences of empathy and intergroup anxiety, this meta-analysis also examined the theoretical factors likely to moderate the relationship between mediated contact and prejudice, focusing specifically on positive-negative asymmetry, the differences between vicarious and parasocial effects, and the duration of mediated contact.

Positive-negative asymmetry

Some researchers have argued that negative mediated contact may have disproportionate effects on prejudice, as compared to positive contact (e.g., Brown & Hewstone, 2005; Paolini et al., 2010). Focusing on category salience (i.e., the awareness of a contact person's group membership) as a key moderator of contact effects (Brown & Hewstone, 2005), Paolini et al. (2010) argued that negative mediated contact increases the awareness of outgroup membership more (i.e., makes the outgroup category more salient) than positive contact and, hence, negative media portrayals have greater potential to exacerbate negative intergroup attitudes, as compared to positive encounters.

Barlow et al. (2012) further examined the differences in the magnitude of positive- versus negative-contact effects. In their study, using two large sets of survey data from the United States and Australia, the direct comparison of positive and negative contact revealed that negative contact increases prejudice more than positive contact alleviates it. Barlow et al. (2012, p. 1631) labeled these disproportionate influences of contact valence the *positive-negative asymmetry effect*. They noted that their findings are consistent with the general psychological tendency to assign greater

weight to negative information than positive information when making judgments (for a review, see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Based on this rationale, we propose the following hypothesis:

> **H3:** Negative mediated contact increases prejudice more than positive mediated contact decreases prejudice.

Vicarious versus parasocial contact

Of particular interest to this study are the differences in effects on prejudice, stemming from the types of contact presented to viewers: specifically, vicarious contact, wherein the media depicts intergroup contact to the viewer, as compared to parasocial contact, wherein the media facilitates intergroup contact with the viewer. Ortiz and Harwood (2007), for instance, found straight viewers' identification with a straight character who has positive interactions with a gay character in a sitcom predicted favorable attitudes toward homosexuals in general. The explanation for the effectiveness of vicarious contact at reducing prejudice is grounded in social cognitive theory (Bandura, 1977), which argues that viewers learn positive attitudes by watching positive intergroup encounters (Joyce & Harwood, 2014).

Research on the type of contact that facilitates an intergroup encounter with the viewer—parasocial contact—originates from Schiappa et al.'s (2005) parasocial contact hypothesis (PCH). PCH is built on the principles of Allport's (1954) contact hypothesis by extending them to mediated contexts. In contrast to the vicarious-contact literature, parasocial-contact research suggests a different explanatory mechanism for prejudice reduction. Schiappa et al. (2005, 2006) incorporated Horton and Wohl's (1956) concept of *parasocial interaction*, which describes the phenomenon where media users feel an intimate association with media personae whom they have never met. PCH predicts that associations with media personae function similarly to face-to-face experiences, and positive parasocial contact should decrease prejudicial attitudes and beliefs.

Although both the vicarious (e.g., Joyce & Harwood, 2014; Ortiz & Harwood, 2007) and parasocial (e.g., Hoffner & Cohen, 2015; Shim, Zhang, & Harwood, 2012; Wong, Lookadoo, & Nisbett, 2017) contact literatures provide empirical support for their version of mediated-contact effects, vicarious contact might have a stronger influence on prejudice reduction because this type of contact specifically focuses on the depictions of positive intergroup interactions between an ingroup and an outgroup member and, thereby, provides a model for a positive intergroup contact (Harwood, 2010; Harwood et al., 2016). As Harwood et al. (2016) explained:

> [With] parasocial contact, exposure to a positive outgroup member might have a positive effect on the observer's attitudes, but there are no opportunities for modeling effective intergroup contact, nor is there an opportunity for identification with the ingroup member in the message to enhance the effects of the contact experience. (p. 939)

Thus, an opportunity for modeling is the key feature that separates the benefits of vicarious contact from parasocial contact. As a result, vicarious contact should produce a greater magnitude of influence.

Although direct comparisons are rare in the mediated-contact literature, there is some empirical evidence in support of stronger vicarious effects. In one example, Mazziotta, Mummendey, and Wright (2011, study 2) examined the effects of ingroup-outgroup interaction (vicarious) in comparison to an outgroup member performing similar behaviors without an ingroup member being present (parasocial). They found that vicarious contact resulted in attitudes that were less prejudicial than did parasocial contact. In another example, Harwood et al. (2016) exposed non-Arab participants to either a non-Arab/Arab collaboration (vicarious) or an Arab/Arab collaboration (parasocial), finding that vicarious contact reduced prejudice more than parasocial contact. This reasoning serves as the basis for our next prediction:

H4: Vicarious contact produces stronger effects than parasocial contact.

Duration of exposure

Another moderating variable that could potentially inform theorizing about the relationship between mediated contact and prejudice is the length of media exposure. Although there is a lack of consensus in the literature regarding the optimal amount of mediated contact necessary to initiate changes in prejudice, there is some theoretical basis for the idea that greater mediated contact should lead to larger effects on prejudicial attitudes. One such theoretical explanation comes from cultivation theory (Gerbner & Gross, 1976). Because the media (and particularly television) is a prevailing source of socialization in modern society, cultivation theory predicts that the effects of media exposure vary as a function of the amount of media consumption. Consequently, heavy media consumers (vs. light users) are more likely to hold attitudes and beliefs about the world that are consistent with media depictions (Morgan, Shanahan, & Signorelli, 2009). The notion that exposure duration is a moderator for contact effects is also echoed in PCH: As Schiappa et al. (2006, p. 22) noted, "televisual exposure must be repeated or sustained over time" for parasocial contact to decrease prejudice. Indeed, some scholars of mediated contact (e.g., Atwell Seate, 2017) situate PCH as only applicable to long-term parasocial relationships.

Although the effect of the duration of exposure has remained more of a theoretical assumption rather than an independent variable in experimental research, there is some empirical support for its effect in the mediated intergroup-contact literature. For instance, supporting cultivation theory, Mastro et al. (2007) found that negative stereotyped perceptions of Latinos (e.g., as criminals) increased with greater television consumption. Dixon (2008) found a similar pattern, as negative perceptions of Blacks were positively associated with increased consumption of television news, a media source that over-represents Blacks as criminals. Testing PCH, Schiappa et al. (2006) likewise found the viewing frequency of a sitcom depicting gay characters to be negatively correlated with prejudice toward gay men. Finally, an earlier

meta-analysis on parasocial relationships and television viewership (Schiappa, Allen, & Gregg, 2007) revealed that the amount of exposure was positively related to parasocial relationships. Taken together, these findings provide the foundation for our fifth prediction:

> **H5:** Duration of exposure is positively related to mediated-contact effects.

Exploratory moderators

In line with previous meta-analyses of direct (e.g., Pettigrew & Tropp, 2011) and extended contact (Zhou et al., 2018), exploratory moderating variables of study characteristics were also examined. These variables are largely atheoretical, but they may help explain the variance in mediated-contact study effects and inform future research efforts. Examining the year of publication assesses the stability of mediated-contact effects over time. Other exploratory variables may reveal artifacts in the literature, which is why the effects of the outgroup featured in the stimulus and a lack of racial/ethnic diversity (i.e., Whiteness) of participant samples were examined. Regarding the former exploratory variable, it is possible that perceptions of certain outgroups are more (or less) affected by mediated contact, necessitating focusing on outgroup type as a potential moderator.

The influences of some exploratory moderators were examined because their effects were significant in Schiappa et al.'s (2007) meta-analysis on parasocial relationships and television viewership. Their meta-analytic results indicated that women and older participants were more likely to form parasocial relationships. Whether those findings translate to other mediated-contact effects is an empirical question. In addition, Schiappa et al. (2007) found that experiments produced dramatically stronger and more stable results than did surveys. If mediated-contact effects can only be produced in laboratory settings, the validity of the effects is more suspect. To explore these issues, we ask:

> **RQ:** How do exploratory variables (year of publication; the method used in the study; outgroup featured in mediated contact; and participants' Whiteness, gender, and age) moderate mediated-contact effects?

Method

Literature search

A literature search was conducted categorizing empirical research investigating the relationship between mediated-intergroup contact and prejudice. A selection of key terms (i.e., *parasocial, parasocial contact, parasocial contact hypothesis*, *vicarious contact*, *mediated contact*, and *mediated intergroup contact*) was used to search 12 electronic databases (e.g., Academic Search Plus, Academic Search Elite, Anthropology Plus, Business Source Elite, Education Resources Information Center (ERIC), Communication Source, Humanities & Social Sciences Index Retrospective: 1907–1984, Psychology and Behavioral Sciences Collection, PsychInfo, Social Work Abstracts,

SocIndex, and Sociological Collection). Published and unpublished research was retained, including conference presentations ($k = 4$) and dissertations ($k = 5$). The search was repeated several times for exhaustiveness. The initial sample was then screened based on two criteria: (a) the use of quantitative methods; and (b) a focus on mediated, parasocial, or vicarious contact (i.e., not direct, extended, or imagined contact). The final sample included 79 cases ($N = 21{,}857$; $M = 280.22$; $SD = 290.84$) from 62 research articles, conference papers, and dissertations examining the relationship between mediated contact and prejudice.

Operationalization of the key study variables

Mediated-intergroup contact

Mediated-intergroup contact was operationalized as (a) general self-reported exposure to mediated content; and (b) experimentally manipulated exposure to mediated content. The types of media in the analyses included: general media exposure, news, radio, reading stories/books/narratives, TV shows, movies, online videos, and videogames (see Table 1 for more detail on how mediated contact was operationalized in each study).

Prejudice

We operationally defined prejudice using measures assessing outgroup bias (see Table 1). The most common measures were social distance (Esses & Dovidio, 2002; see Ortiz & Harwood, 2007), a variety of scales capturing attitudes toward an outgroup (e.g., outgroup feeling thermometer, see Mäkinen, Liebkind, Jasinskaja-Lahti, & Renvik, 2019), modern homonegativity scale (see Sink & Mastro, 2018), and Herek's (1988) attitude toward lesbians and gay men (see Detenber, Ho, Neo, Malik, & Cenite, 2013; Schiappa et al., 2005, 2006), as well as measures assessing stereotypical beliefs (e.g., attitudes toward interracial relationships, see Lienemann & Stopp, 2013; stereotypes about African Americans, see Ramasubramanian, 2011).

Intergroup anxiety

To measure *intergroup anxiety,* versions of Stephan and Stephan's (1985) 10-item intergroup anxiety scale were most frequently employed (e.g., Pagotto & Voci, 2013; Shim et al., 2012; Visintin, Voci, Pagotto, & Hewstone, 2017).

Empathy

Empathy was operationalized as a cognitive (e.g., "I try to understand their way of thinking," "I see things from their point of view") and emotional state (e.g., tenderness, sympathy, sadness) and was frequently measured with versions of Voci and Hewstone's (2003) 16-item scale. In addition, identification was used as a proxy for empathy and was typically measured with Eyal and Rubin's (2003) 6-item scale. (Using identification as a proxy is reasonable since empathy is often measured as part of the identification index: e.g., Lookadoo, 2017.)

Table 1 Cases Included in the Meta-Analysis

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Abrams et al. (2018)	–	P	Amount of Google news consumption	Attitudes toward Muslims	372	−.24	−.33	−.14
Andrews et al. (2018)	–	V	YouTube poker videos (negative vs. no contact)	Attitudes toward Russians	98	−.21	−.39	−.02
Atwell Seate & Mastro (2016)	–	V	Video of local news reports, framing immigration as a threat vs. not	Attitudes toward undocumented immigration (a human rights factor)	444	−.40	−.48	−.32
Bilalia & Vollhardt (2013)	+	P	A character from Rwandan radio drama vs. control	Mistrust toward other ethnic groups	842	−.41	−.46	−.35
Bond & Compton (2015)	+	P	Gay TV exposure	Gay equality endorsement	342	−.27	−.37	−.17
Bresnahan et al. (2019)	+	P	Ingroup vs. outgroup member telling a story of intergroup contact	Desire to exclude immigrants	195	−.02	−.16	.12

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Busselle & Crandall (2002)	−	P	Hours of TV news exposure	Lack of motivation as the reason socioeconomic difficulties among African Americans	139	−.19	−.35	−.02
Cadenas et al. (2018)	+	P	Documentary (*The Dream is Now*) advocating for a path to citizenship for undocumented immigrants	Intimacy prejudice (a subscale of the blatant and subtle prejudice measure)	179	−.18	−.32	−.04
Cameron et al. (2006)	+	V	Children's adventure stories of English and refugee friends vs. control	Outgroup attitudes	253	−.18	−.30	−.06

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Cameron et al. (2007) study 1	+	V	Children's adventure stories of non-disabled and disabled (learning or physical disability) friends vs. control	Outgroup attitudes	49	−.40	−.60	−.16
Cameron et al. (2007) study 2	+	V	Children's stories describing adventures of English and refugee children vs. control	Outgroup attitudes	98	−.36	−.51	−.18
Castelli et al. (2008) study 1	+ vs. –	V	A video of a White and Black adult interacting in which a White adult is either being friendly or not	Personal attitudes toward the Black adult in the video	78	−.36	−.54	−.15

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Castelli et al. (2008) study 2	+ vs. –	V	A video of a White and Black adult interacting in which a White adult is either being friendly vs. not	Personal attitudes toward the Black adult in the video or another Black	79	−.43	−.59	−.23
Detenber et al. (2013)	n/a	P	Mediated exposure to homosexual content (films and TV)	Attitude toward lesbians and gay men	764	−.25	−.31	−.18
Figueroa-Caballero et al. (2019)	−	P	Sexualized media portrayals of Latina characters vs. control	Character evaluations	159	−.88	−.90	−.84
Ford (1997)	−	P	TV comedy skits with stereotypical vs. neutral portrayal of African Americans	Determination of perpetrator's guilt	40	−.39	−.61	−.11

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Fujioka (1999) Japanese sample	+	P	Exposure to positive attributes of African Americans in entertainment TV	Endorsement of "African Americans are violent" stereotype	83	−.41	−.57	−.21
Fujioka (1999) White sample	−	P	Exposure to negative attributes of African Americans in entertainment TV	Endorsement of "African Americans are violent" stereotype	166	−.19	−.33	−.03
Gómez & Huici (2008)	+	V	Basketball training video, where ingroup and outgroup teams coordinated with each other	Evaluation of negative traits of the outgroup	107	−.54	−.66	−.39
Harwood & Vincze (2012)	+	P	Minority language media consumption (Swedish in Finland)	Stereotypes of minority Swedish speakers	308	−.33	−.43	−.23

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Herek & Capitanio (1997) general population	+	P	Awareness of Magic Johnson's TV announcement of his HIV status	Avoidance of people with AIDS (behavioral intentions)	382	.10	.00	.20
Herek & Capitanio (1997) Black adults	+	P	awareness of Magic Johnson's TV announcement of his HIV status	Avoidance of people with AIDS (behavioral intentions)	420	.07	−.03	.16
Hoffner & Cohen (2012)	+	P	PSR with TV show character (*Monk*)	Social distance from people with OCD	142	−.25	−.40	−.09
Hoffner & Cohen (2015)	+	P	PSR with TV show character (*Monk*)	Social distance from people with OCD	172	−.15	−.29	.00
Hoffner et al. (2008)	−	P	Exposure to online news about the Virginia Tech shooting	Stereotypes of mental illness	207	−.27	−.39	−.14

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Husnu et al. (2018) study 1	−	P	Recalled negative stories about Greek Cypriots	Attitudes toward Greek Cypriots	86	−.28	−.46	−.07
Husnu et al. (2018) study 2	+	V	Recalled positive stories about Greek Cypriots	Attitudes toward Greek Cypriots	75	−.33	−.52	−.11
Joyce & Harwood (2014)	+ vs. -	V	Video of positive vs. negative contact between a volunteer Border Patrol agent and an illegal immigrant (*30 Days*)	Attitudes toward illegal immigrants	78	−.34	−.52	−.14
Ju, Park, Shim, & Ku (2016)	−	P	Negative news stories vs. control	Social distance from migrant workers	109	−.20	−.37	−.02
Kim (2018)	+	P	Newspaper story vs. control	Social distance from African or Native Americans	100	−.17	−.35	.03

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Li (2019)	+ vs. –	V	Clips of intergroup interactions (*Becoming US*)	Attitudes toward transgender people	117	−.15	−.32	.03
Liebkind & McAlister (1999)	+	V	Stories of attitude change and positive contact with foreigners	Tolerance toward foreigners	1480	−.01	−.06	.04
Liebkind et al. (2014)	+	V	Stories of intergroup friendships with immigrants	Outgroup feeling thermometer	1586	−.01	−.06	.04
Lienemann & Stopp (2013)	+	V	Number of recalled media-portrayals of Black–White romantic rel.	Attitudes toward interracial relationships	218	−.19	−.31	−.06
Lookadoo (2017)	+	P	PSR with show character (*Parenthood*)	Social distance (similarity with at-risk character)	234	−.18	−.30	−.05

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Mäkinen et al. (2019)	+	V	Stories of friendships with ethnic minorities	Outgroup feeling thermometer	561	−.02	−.11	.06
Mallet & Wilson (2010) study 2	+	V	Video of interracial vs. same-race friendships	Proportion of interracial Facebook friends	99	−.43	−.58	−.25
Massey et al. (2018) study 1	+	P	PSR with sitcom (*Little Mosque*) characters	Social distance from Muslims	231	−.17	−.29	−.04
Massey et al. (2018) study 2	−	P	PSR with a Muslim villain	Social distance from Muslims	204	−.18	−.31	−.04
Massey et al. (2019)	+	P	PSI with transgender character (*Transparent*)	Social distance from transgender people	163	−.13	−.28	.02
Mastro et al. (2007)	−	P	Exposure to Latino criminality on TV	Perceptions of Latino criminality	275	−.25	−.35	−.13

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Mazziotta et al. (2011) study 1	+	V	Videos of intercultural interaction (a German and a Chinese student)	Willingness for contact with Chinese people	48	−.39	−.61	−.12
Mazziotta et al. (2011) study 2	+	V	Videos of intercultural interaction (a German and a Chinese student)	Willingness for contact with Chinese people	53	−.33	−.55	−.07
McLaughlin & Rodriguez (2017)	n/a	P	Exposure to various gay TV characters	Prejudice against homosexuals	972	−.03	−.09	.03
Moyer-Gusé, Dale, & Ortiz (2018)	+	V	2 episodes of *30 Days*: a Christian man living with a Muslim family vs. control	Anti-Muslim prejudice	252	−.24	−.35	−.12

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Ortiz & Harwood (2007)	+	V	Amount of exposure to Will and Grace	Social distance from gay people	163	−.23	−.37	−.07
Pagotto & Voci (2013)	−	P	TV news and movie immigrant portrayals	Attitudes toward immigrants	153	−.30	−.44	−.15
Paluck (2009)	+	P	Rwandan radio soap opera containing anti-prejudice message vs. control	Social norms regarding outgroup marriage	480	−.28	−.36	−.20
Paolini et al. (2014) experiment 1	−	P	Portrayal of intergroup interaction with an illegal immigrant (*30 Days*)	Category salience	83	−.41	−.57	−.23

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Ramasubramanian (2010)	−	P	Perceived stereotypes on TV	Prejudicial feelings toward minorities	323	−.19	−.29	−.08
Ramasubramanian (2011)	+ vs. −	P	Exemplar recognition of media portrayals of African Americans	Stereotypes about African Americans	363	−.29	−.33	−.14
Ramasubramanian (2013)	−	P	Recalled mediated vs. non-mediated contact	Stereotypes about African Americans	287	−.34	−.44	−.23
Ramasubramanian (2015)	+ vs. −	P	Counter-stereotypical vs. stereotypical news stories about African American celebrities	Symbolic racism beliefs	88	−.49	−.63	−.31

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Rupar & Graf (2019)	–	P	Frequency of mediated outgroup (Croatians/Bosnians) contact	Perceptions of outgroup as a threat	545	−.20	−.28	−.12
Saleem & Anderson (2013) study 1	–	P	Stereotypical videogame (*Counter Strike*) portrayals of Arabs vs. controls	Explicit anti-Arab attitudes	204	−.20	−.32	−.06
Saleem & Anderson (2013) study 2	–	P	Stereotypical videogame (*Counter Strike*) portrayals of Arabs vs. controls	Explicit anti-Arab attitudes	150	−.42	−.51	−.32
Saleem et al. (2016) study 1	–	P	Reliance on media contact for opinions about Muslims	Stereotypes about Muslims	178	−.37	−.49	−.24

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Saleem et al. (2016) study 2	–	P	Reliance on media contact for opinions about Muslims	Stereotypes about Muslims	351	−.29	−.38	−.19
Saleem et al. (2017) study 1	–	P	Recalled news exposure depicting Muslims as terrorists	Endorsement of military action against Muslims	715	−.15	−.22	−.08
Saleem et al. (2017) study 2	–	P	Recalled news exposure depicting Muslims as terrorists	Endorsement of civil restrictions against, negative stereotypes about Muslims	200	−.34	−.45	−.21
Saleem et al. (2017) study 3	–	P	Exposure to stereotypical news clips (Muslims = terrorists) vs. controls	Endorsement of civil restrictions, military action against, stereotypes about Muslims	400	−.29	−.38	−.20

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Schiappa et al. (2005) study 1	+	P	Exposure to *Six Feet Under* vs. control	Attitudes toward gay men	182	−.17	−.31	−.03
Schiappa et al. (2005) study 2	+	P	Exposure to *Queer Eye for a Straight Guy* vs. control	Attitudes toward gay men	160	−.26	−.39	−.11
Schiappa et al. (2005) study 3	+	P	Exposure to Eddie Izzard vs. control	Attitudes toward cross-dressers	61	−.18	−.41	.06
Schiappa et al. (2006)	+	P	PSI with a gay character (*Will and Grace*)	Attitudes toward lesbians and gay men	245	−.34	−.45	−.22
Shim et al. (2012)	n/a	P	Amount of viewing of U.S. dramas	Willingness to engage in activities U.S. Americans	181	−.21	−.35	−.07
Sink & Mastro (2018)	n/a	P	Exposure to and recall of TV gay characters	Homonegativity	109	−.22	−.39	−.03
So & Nabi (2013)	+	P	PSI with a character (*Sex in the City*, *Grey's Anatomy*, *Entourage*)	Social distance from people with STDs	500	−.46	−.53	−.39

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Stevens (2016) study 1	+	P	PSI with a character (*Enlightened*)	Social distance from people with mental illness	95	−.56	−.68	−.40
Stevens (2016) study 2	+	P	PSI with a character (*Girls*)	Social distance from people with mental illness	82	−.42	−.58	−.22
Vezzali et al. (2012)	+	V	Intercultural book reading vs. control	Desire for future contact with immigrants	99	−.30	−.47	−.12
Vezzali et al. (2015) study 1	+	P	*Harry Potter* passages on prejudice vs. control	Attitudes toward immigrants	34	−.23	−.51	.09
Vezzali et al. (2015) study 3	+	P	*Harry Potter* books and films	Attitudes toward refugees	71	.13	−.11	.35
Vezzali et al. (2018)	+	V	Video of intercultural friendships (vs. control)	Attitudes toward immigrants	485	−.07	−.16	.02

(Continued)

Table 1 Continued

Case	Valence	Parasocial/ Vicarious	Contact Manipulation/ Measure	Prejudice Measure	*n*	*r*	95% Lower Bound	CI Upper Bound
Visintin et al. (2017) study 1	−	P	Contact through TV news and newspapers	Attitudes toward immigrants	199	−.12	−.25	.02
Visintin et al. (2017) study 2	−	P	Contact through TV news and newspapers	Attitudes toward immigrants	330	−.33	−.42	−.23
Wong, Lookadoo, & Nisbett (2017)	+	P	PSI with Demi Lovato after watching her videos on mental health	Social distance from people with bipolar disorder	302	−.22	−.32	−.11
Wu, Mou, Wang, & Atkin (2018)	+	P	Frequency of leaving comments, forwarding LGB celebrities' posts, and sending messages to LGB celebrities in the past 12 months	Acceptance of homosexuality	980	−.08	−.14	−.02

Note: Data are for the relationship between mediated contact and prejudice, along with the weighted mean effect estimates, confidence intervals, sample size, and operationalizations of each construct. All effects were converted to reflect a reduction in prejudice from positive contact or an increase in prejudice from negative contact. Per editorial request, all references for cases used in present meta-analysis are provided as supplemental information available online. AIDS = acquired immunodeficiency syndrome; HIV = human immunodeficiency virus; LGB = lesbian, gay, and bisexual; OCD = obsessive compulsive disorder; P = parasocial; PSI/PSR = parasocial interaction/relationships; STD = sexually transmitted disease; V = vicarious.

Theoretical moderators

Contact valence: Positive versus negative

Positive mediated contact ($k = 42$) was operationally defined as either recalling or consuming media that depicts outgroups collaborating or engaged in cooperative behaviors with others. This designation was intended to capture Allport's (1954) concept of positive intergroup contact. In addition, positive contact was also operationalized as recalling or being exposed to outgroup members who are depicted in counter-stereotypical ways (e.g., depictions that represented admirable or respectable qualities of outgroup members or elicited reactions of joy or mirth). Recalled contact was coded as positive when there was content-analytic evidence that the portrayal was positive (e.g., Bond & Compton, 2015).

Negative mediated contact ($k = 26$) was defined as exposure to or recall of outgroup members engaged in conflict or competition with others. Additionally, outgroup members portrayed in damaging, stereotypical ways (e.g., Muslims being portrayed as terrorists) were coded as negative mediated contact. Recalled contact was coded as negative when there was content-analytic evidence that the portrayal was negative (e.g., Mastro et al., 2007).

Six studies compared positive intergroup contact to negative intergroup contact (e.g., Li, 2019), making them not suitable for inclusion in this test of moderation. These cases were included in the overall effect size calculation but omitted from the valence analysis. For experiments that tested positive and negative intergroup contact against a neutral control, and for surveys of recalled contact of positive and negative contact, the negative contact effect was selected in order to have a sufficient number of negative cases to test moderation effects, except for cases where the negative effect was not reported (e.g., Fujioka, 1999, White sample). Finally, there were four cases where the exposure valence was unclear (Detenber et al., 2013; McLaughlin & Rodriguez, 2017; Shim et al., 2012; Sink & Mastro, 2018), and those cases were omitted from the valence moderation analysis.

Type of contact: Parasocial versus vicarious

At its core, the difference between parasocial and vicarious contact resides in the *content* of a message to which people are being exposed: In parasocial contact, viewers (V) from one group (A) are exposed to a mediated stimulus (M) depicting group B (VA→MB), whereas in vicarious contact, viewers from group A are exposed to a media stimulus depicting contact between groups A and B (VA→MAB). Based on this definition, vicarious contact can be thought of as a subset of parasocial contact wherein viewers' contact occurs through an AB interaction, through which they also come into contact with members of group B. Thus, all vicarious contact is parasocial, but not all parasocial contact is vicarious. Based on this logic, the following coding scheme was created: All mediated outgroup contact was coded as parasocial ($k = 56$), unless the content depicted an ingroup-outgroup interaction, in which case the subset was coded as vicarious ($k = 22$).

Duration of mediated contact

The majority of studies (especially those that employed survey methodology) either did not provide the length of exposure values or used a variety of different metrics to capture it, making averaging across studies impossible. When a treatment length was not reported, but the name of a program was provided, we obtained the length of exposure from the online description of the stimulus located on the production company's website. All reports of mediated contact duration that were measured in seconds and hours were converted to minutes. Overall, the length-of-exposure values were obtained for 25 cases ($M = 43.79$; $Mdn = 10.00$; $SD = 111.87$; range, .75–561.6 minutes).

Exploratory moderators

Year of publication

This moderator represented the year of journal article publication, dissertation defense, or conference paper presentation. The average year of publication was 2012 ($Mdn = 2013.5$; $SD = 6.01$; range, 1997–2019).

Age

The mean age of participants was recorded in years for each sample ($M = 23.06$; $SD = 1.05$; range, 4.53–50.80 years). If age was not provided ($k = 3$), such entries were coded as missing data.

Biological sex

We converted the biological sex descriptives provided for each sample to a scale ranging from 0, indicating that all participants in a given sample were males, to 1, indicating that all participants were females. The biological sex composition of the studies included into this meta-analysis indicated that on average, the studies contained more self-identified females (60%; $SD = 13\%$; range, 8%–88%) than males.

Racial composition of sample

Similar to biological sex, we converted the demographic data associated with racial and ethnic descriptives of each study's participant to a scale ranging from 0, indicating that none of the participants were White, to 1, indicating that all participants were White (missing data: $k = 2$). The racial composition of the study participants in our data corpus indicated that on average, study samples were predominantly Caucasian (74%; $SD = 32\%$; range, 0%–100%).

Outgroups

The studies included in the meta-analysis focused on several different outgroups, examining prejudice and outgroup attitudes to immigrants ($k = 27$); marginalized groups based on sexual orientation (i.e., lesbian, gay, bisexual, transsexual, and queer community individuals, $k = 12$), religion (Muslims, $k = 12$), or race (specifically, Black, $k = 14$); people with mental illness ($k = 6$); and individuals with sexually

transmitted diseases ($k = 3$). Four cases did not fit into any of the derived categories and were classified as other.

Research method

We recorded the type of research design employed in each study: experiments ($k = 41$), surveys ($k = 33$), and field studies ($k = 4$).

Coding

Many of the variables in the sample did not require coding (e.g., age, research method), but the moderators of positive/negative contact and vicarious/parasocial contact had to be coded. The first and the third author discussed the theoretical concepts behind the coding schemes, and classified the studies as representing positive/negative and vicarious/parasocial contact (Krippendorff's alpha > .85 for all coded variables indicates acceptable intercoder reliability).

Results

Effect size extraction and computation of weighted mean effects

To analyze the results, we performed six separate meta-analyses to estimate the weighted mean associations among variables of interest: mediated contact, empathy, intergroup anxiety, and prejudice. The procedures for each meta-analysis involved two steps. In the first step, the effect estimates were entered for each variable pair into Comprehensive Meta-Analysis 3.0 (Borenstein, Hedges, Higgins, & Rothstein, 2005). The software allows several different formats of effect estimate entry: (a) product-moment correlation coefficients obtained from their respective research reports or through correspondence with the authors; when correlation tables for the effects of interest were not available, effect estimates were entered as (b) converted regression weights; or as (c) group means, standard deviations, and sample size for each group (all of which were entered into the software separately, and the software automatically computed an effect estimate for each pair of means). For (a) and (b), we also entered the overall sample size for each effect estimate. The second step involved conducting a random effects meta-analyses (Hedges & Vevea, 1998). For the list of cases included in the meta-analysis of the relationship between mediated contact and prejudice, along with the weighted mean effect estimates, confidence intervals, sample size, and operationalizations of each construct, see Table 1.

Analytic strategy and interpreting statistics in meta-analyses

Prior to moderation analyses, the overall effect size was examined for heterogeneity using the Q statistic: A heterogeneous effect (a significant Q) "means that the variability across effect sizes is greater than expected from sampling error alone" (Lipsey & Wilson, 2001, p. 133). To test the effects of categorical moderators, the meta-analytic analog to an analysis of variance, Q_B, was used: Like an F test in an analysis of variance, a significant Q_B means that the categorical variable explained a

significant amount of the effect size variability (Lipsey & Wilson, 2001). The effect of continuous moderators was tested in meta-regression.

H1: Overall effects of mediated contact on prejudice

To calculate an overall effect of mediated contact on prejudice, negative mediated effects were reverse coded to be in the same direction as positive effects. Hence, the overall effect calculated in this study represents how much positive contact reduces prejudice, as well as how much negative contact increases prejudice. Overall, the effect for mediated contact on prejudice reduction was significant ($r = -.26$; 95% CI, $-.30$ to $-.22$; $Z = -11.29$; $p < .001$; $k = 78$) with significant heterogeneity in effect sizes ($Q[77] = 879.10$; $p < .001$).

H2: Mediational model

In the absence of a measurement model, the path model proposed in Pettigrew and Tropp (2008), wherein all variables are connected to each other, is fully saturated. Such just-identified models have zero degrees of freedom and result in a perfect model fit, which makes assessments of the model's fit not meaningful. To remedy the issue of identification, we chose not to estimate the path between anxiety and empathy, but we kept all other paths as in the original model. Removing the path between anxiety and empathy made estimations of the model's fit possible.

The correlation matrix reported in Table 2 was used in LISREL 9.2 (Jöreskog & Sörbom, 2014) to test the path model. We entered the average sample size of all cases ($n = 280$) as the sample size for the model. To examine the model's goodness of fit, Hu and Bentler's (1999) dual criteria were applied, wherein comparative fit index values $\geq .90$ and standardized root mean square residual values $\leq .10$ indicate adequate fit. With a comparative fit index of .90 and a standardized root mean square residual of .08, the model's fit was adequate. The standardized path coefficients are presented in Figure 1. As evident from Figure 1 and as predicted, mediated contact decreased intergroup anxiety and increased empathy; subsequently, intergroup anxiety was positively and empathy was negatively related to prejudice. The total ($-.26$; $p < .05$) and the indirect ($-.15$; $p < .05$) effects of mediated contact on prejudice were significant, offering evidence of a mediated relationship.

With regard to the latter point, it should be noted that although there are more contemporary approaches, such as employing a bootstrapping method for indirect effects estimation, using such methods on meta-analytic (aggregate) data is impossible because raw data are required for bootstrapping (Hayes, 2009). Instead, we used path coefficients and standard errors from the mediation model to conduct a product of coefficients test to evaluate the indirect effects (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon, Lockwood, & Williams, 2004; for an illustration of this approach, see Holbert & Stephenson, 2003). Based on this approach, the indirect effect through anxiety was significant (-27.30; $p < .001$), and so was the indirect effect through empathy (-21.67; $p < .001$). Together, these results indicate that

Table 2 Effects Derived from the Six Meta-Analyses Entered into the Mediation Model

	1	2	3	4
1. Mediated contact	—	—	—	—
2. Intergroup anxiety	$r = -.21$; $k = 18$; 95% CI, −.28 to −.14	—	—	—
3. Empathy	$r = .26$; $k = 16$; 95% CI, .18 to .33	$r = -.28$; $k = 9$; 95% CI, −.37 to −.19	—	—
4. Prejudice	$r = -.26$; $k = 78$; 95% CI, −.31 to −.22	$r = .48$; $k = 15$; 95% CI, .36 to .58	$r = -.39$; $k = 18$; 95% CI, −.48 to −.28	—

Note: k = number of cases.

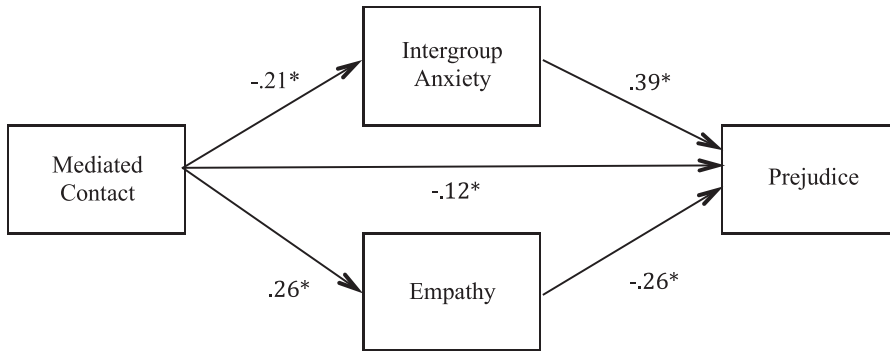

Figure 1 Path model with standardized coefficients. *$p < .05$

both intergroup anxiety and empathy play an important role in the process between mediated contact and prejudice.

Hypotheses 3–5: The effects of theoretical moderators

Although in the opposite direction, the magnitude of the effects for positive mediated contact ($r = -.23$; 95% CI, −.29 to −.17; $p = .001$; $k = 42$) and negative mediated contact ($r = .31$; 95% CI, .24 to .38; $p = .001$; $k = 26$) were not statistically different from each other ($Q_B[1] = .92$; $p = .10$); hence, H3, predicting that negative mediated contact increases prejudice more than positive mediated contact decreases prejudice, was not supported.

Because the effects of parasocial contact ($r = -.26$; 95% CI, −.31 to −.21; $p = .001$; $k = 56$) and vicarious contact ($r = -.26$; 95% CI, −.34 to −.18; $p = .001$; $k = 22$) were not significantly different from each other ($Q_B[1] = .00$; $p = .99$), H4, predicting that vicarious contact produces stronger effects than parasocial contact, was not supported.

Table 3 The Results for Continuous Exploratory Moderators

Covariate	Coefficient	*SE*	95% CI Lower	95% CI Upper	Z	*p* (two-tailed)
Intercept	8.46	8.31	−7.83	24.76	1.02	.31
Year	.00	.00	−.01	.00	−1.06	.29
Female	−.14	.19	−.51	.24	−.70	.48
Whiteness	.05	.08	−.11	.21	.63	.53
Age	.00	.00	.00	.01	1.85	.06

Note: Test of the model: $Q(4) = 5.95$, $p = .20$; goodness of fit: $Tau^2 = .04$, $Tau = .19$, $Q(70) = 733.13$, $p < .001$.

H5 predicted a positive effect for mediated-contact duration on prejudicial attitudes. There was no effect for duration of exposure on prejudice ($b = 0$; $SE = 0$; $Z = .75$; $Q[1] = .56$; $p = .46$; $k = 25$). Hence, H5 was not supported.

RQ: The effects of exploratory moderators

The only categorical exploratory moderator that yielded significant effects was research method ($Q_B[2] = 11.96$; $p = .003$), as the results demonstrated that experimental effects ($r = -.32$; 95% CI, −.37 to −.27; $p = .001$; $k = 41$) were stronger than survey effects ($r = -.21$; 95% CI, −.27 to −.15; $p = .001$; $k = 33$), but the effect for field research was nonsignificant ($r = -.08$; 95% CI, −.25 to .09; $p = .34$; $k = 4$). For a summary of the meta-regression results for the continuous exploratory moderators, see Table 3.

Discussion

More than 65 years have passed since Allport's (1954) groundbreaking proposition that face-to-face contact between divergent social groups could reduce prejudice and promote intergroup harmony. Although the idea that having different groups of people directly communicate with one another could facilitate appreciating our shared humanity may seem obvious to modern audiences, at the time, as Pettigrew (1998) noted, it represented a major shift in both research and government programs across the globe (e.g., by offering crucial empirical support for desegregation policies). Given that face-to-face contact with opposing group members is not always feasible, researchers have recognized the potential for mediated contact to promote more harmonious intergroup relationships: Prejudice decreases when media portrayals of people from marginalized groups becomes more positive and nuanced (e.g., Schiappa et al., 2005). When viewers have little opportunity for diverse direct contact in their daily lives, the preponderance of negative media portrayals of outgroup members can likewise exacerbate intergroup tensions. Unfortunately, the mass media continues to portray non-dominant groups in ways that accentuate stereotypes (e.g.,

Mastro, 2009), and those depictions negatively influence evaluations of the minority groups associated with them (Atwell Seate, 2017). Thus, understanding the effects of mediated contact, along with the mechanisms through which mediated contact affects prejudice, becomes increasingly important.

The present meta-analysis focused on the effects of mediated intergroup contact on prejudicial attitudes. Both positive and negative mediated-contact effects on prejudice were examined, producing associations of a similar magnitude in opposite directions ($r = -.23$ for positive and .31 for negative contact). One contribution of this study is establishing overall effect sizes for the mediated-contact literature, which can be used for target estimates in future power analyses for mediated-contact research. The effects revealed in this meta-analysis are nontrivial (for the evaluation criteria for effect sizes, see Cohen, 1988), indicating that mediated contact can be an important factor in ameliorating or exacerbating prejudice.

Attempting to answer *how* mediated intergroup contact functions to affect prejudice, the present study demonstrated that the mechanisms of empathy and anxiety both play important roles. Empathy is an evolutionary development that serves as the foundation for collaboration and kindness (Zaki, 2019). Because prejudice is driven by categorization, causing humans to see others in term of us versus them, "empathy mediates contact effects by shifting levels of categorization and placing outgroup members and the self in the same category" (Harwood, 2017, p. 916; see also Gaertner, Dovidio, & Houlette, 2010). Although humans are hardwired for empathy (de Waal & Sherblom, 2018), the extent to which we feel empathic in any given situation is malleable and affected by our social and communication environments. Outgroup exposure through television or movies allows us to learn about others and form a relationship with them, which can increase empathy in a less anxiety-provoking manner than face-to-face encounters. However, the reality of the television landscape paints a darker picture, as content analyses have consistently shown that mass media portrayals of non-dominant groups tend to be negative (e.g., Mastro et al., 2008; Mastro et al., 2007). Mediated contact that emphasizes conflict and competition and/or promotes fear of others can increase intergroup anxiety and decrease empathy, thereby exacerbating stereotyping and prejudicial beliefs.

All contact research can be mapped onto the same contact space, a conceptual framework containing the dimensions of involvement of self in the contact and richness of the self-outgroup experience (Harwood, 2010). Mediated contact, particularly parasocial contact, exists in the same quadrant of contact space as face-to-face contact, as they both represent highly rich and highly self-involving contact experiences. As such, it is not surprising that the meta-analytic mediational model for mediated contact aligns with that of face-to-face contact, or that mediated-contact effects are similar in magnitude to the contact effects reported in previous meta-analyses of other types of contact (Pettigrew & Tropp, 2006; Zhou et al., 2018). Although the relative stability of contact effects across different contexts is noteworthy, a deeper understanding of mediated contact would benefit from examining the factors that distinguish mediated contact from other types of contact, as well as the variables

that amplify or inhibit mediated contact effects. Although many of these moderating variables are beyond the scope of what was tested in the current meta-analysis, they may assist readers in understanding the significance of mediated-contact effects and how the findings of this meta-analysis relate to previous meta-analytic work on contact effects.

A useful starting point from which to consider moderators of contact effects is the interaction between direct and mediated contact. Face-to-face intergroup contact decreases the magnitude of mediated-contact effects (e.g., Sink & Mastro, 2018). Because personal experience is relied on more than mediated experience in prejudicial judgments, face-to-face contact can serve to inoculate (for a discussion of inoculation effects, see Banas & Rains, 2010) against negative mediated-contact effects. For example, you are less likely to be influenced by negative media portrayals of Muslims if you have Muslim friends. Less studied is how mediated-contact experiences affect face-to-face contact. Presumably, negative mediated contact would increase intergroup anxiety and discourage interpersonal contact, while positive contact would decrease intergroup anxiety and encourage interpersonal contact.

Critical thinking skills and media literacy should also strongly moderate mediated-contact effects (Harwood, 2010). Deficits in understanding of how the media works and the various biases it portrays may result in unquestioning acceptance of mediated messaging rife with oversimplification and intergroup threat (Ramasubramanian, 2007). In contrast, more savvy consumers of media content are more likely to scrutinize media messages, juxtaposing them with their own daily experiences and evaluating them with a full understanding of the prevalence of media bias in outgroup coverage; as a result, such consumers will be less influenced (Harwood, 2010). Media literacy should not be nearly as influential in face-to-face contact, although critical thinking skills should inhibit overextrapolation from limited experience to the categorization of an entire outgroup.

Another potential moderator is the state of information processing during contact. Mediated contact experiences, like highly immersive video games, can lead to flow states, characterized by complete involvement, a decreased sense of time, and maximized presence in the moment (Csikszentmihalyi, 1997). Perhaps flow states in mediated environments would lead to stronger effects than face-to-face interactions, where flow states do not typically happen. When in a flow state, like immersive video-game play, the involvement of self and richness of contact experience should both be high but, due to the focus on play and task accomplishment, it is unlikely that the mediated content about outgroups will be critically processed. Perhaps gamers deeply immersed in a video game featuring Arab terrorists (e.g., Saleem & Anderson, 2013) acquire anti-Arab attitudes without much conscious awareness.

The factors discussed in the preceding section help distinguish mediated contact effects from those resulting in other types of intergroup contact. Although these moderators were not tested in the current meta-analysis, they speak to the practical and theoretical issues surrounding mediated contact and are important to consider when assessing whether mediated intergroup contact is a viable option for social

change. Next, we turn to the moderators of mediated contact—exposure duration, vicarious versus parasocial contact, and positive-negative asymmetry—examined in the current meta-analysis.

Time is an interesting moderating variable to consider in mediated contact. The current findings did not support the prediction that the length of mediated-contact exposure affects prejudice. An implication of this finding is the need to separate quantity of contact from quality of contact. Contact that does not affect empathy, impact intergroup anxiety, or provide new information may not affect prejudicial attitudes, regardless of length. Another possibility is that mediated-contact effects can occur very quickly, and longer exposure ceases to affect attitudes beyond a certain threshold. The finding regarding duration of exposure may be helpful in expanding the theoretical boundary conditions of the PCH (Schiappa et al., 2005). Current theorizing limits the PCH only to prolonged contact. This limitation is interesting since positive parasocial relationships are rooted in interpersonal attraction, but interpersonal attraction and relationships are not restricted in such ways. This is evident in such concepts as *love at first sight*, which is a common belief among those with the popular love style, Eros (Hendrick & Hendrick, 1988). It seems plausible that an individual could likewise connect with a character during one stand-up special, film, or television show and that the perceived interpersonal relationship could affect their attitudes and beliefs.

Although the length of exposure did not affect prejudice, there are other issues related to time that may prove to be meaningful when considering contact effects. For example, the issue of past contact has not been given serious research attention (Harwood, 2010). In terms of contact space, mediated (or direct) contact in the past is lower along the dimension of involvement of self than immediate contact experiences, and little is known about the degree to which past experiences shape contact effects.

This meta-analysis also examined the moderating effect of type of mediated contact—specifically parasocial versus vicarious contact—on prejudicial attitudes. Contrary to expectations, vicarious contact did not produce larger effects compared to parasocial contact. This result could mean that observing modeling from ingroup characters does not affect prejudice more than simply observing outgroup characters, or it could highlight the need to examine the different moderating and mediating variables involved in parasocial and vicarious mediated-contact effects. For example, *identification* with the ingroup member when observing ingroup-outgroup contact is a common mediator for vicarious contact, and *connection* with the outgroup character (parasocial relationship) is a common mediator of parasocial contact. In terms of contact space, identification and parasocial relationship both suggest involvement of the self, but in different ways. Identical effects (both $r = -.26$) do not necessarily mean that the same processes underlie those effects, although the fact that parasocial and vicarious contact can happen simultaneously in mediated contexts (Ortiz & Harwood, 2007) makes disentangling them challenging.

Another moderator examined in the present meta-analysis was the valence of mediated contact. Although the data trended in the predicted direction, the meta-analytic findings did not support Barlow et al.'s (2012) notion of positive-negative asymmetry, as negative contact was not "disproportionately influential" (Paolini et al., 2014, p. 558) at exacerbating prejudice, relative to the effects of positive contact at alleviating it. The lack of support for positive-negative asymmetry could be the result of additional variables unaccounted for in the present meta-analysis. For example, negative contact, compared to positive, has been shown to cause higher category salience (i.e., the awareness of outgroup membership; Paolini et al., 2010), but category salience is infrequently measured in mediated-contact studies and was not controlled for in the current meta-analysis. Another possibility is that positive-negative asymmetry is more of a face-to-face phenomenon. Indeed, most of the studies reporting support for the positive-negative asymmetry involved direct rather than mediated contact.

Although our meta-analysis found no statistically significant difference between positive and negative mediated-contact effects, it is possible that positive-negative asymmetry represents the nature of mediated intergroup contact outside of academic study. Drama requires some type of conflict, the news tends to cover negative events, and many videogames are based on violence and fighting. We know from content analyses that most depictions of non-dominant groups tend to be negative (e.g., Mastro et al., 2008), although there are increasing numbers of positive portrayals of outgroups in the media (e.g., Schiappa et al., 2006). In a practical sense, mediated intergroup contact overall is likely to be more negative than positive. Most face-to-face contact will never approach the levels of conflict and negativity that are inherent to mediated contact.

Concerning exploratory moderation analyses, the only significant effect was for study method. Effect sizes were larger in experimental studies, where participants were exposed to mediated contact with outgroup members chosen by researchers, than in survey research, where participants recalled mediated outgroup contact. Experiments have the advantage of control (at the expense of potential demand effects), whereas a survey does not (Herrett-Skjellum & Allen, 1996). Although we might expect experiments to produce stronger effects, it is important that mediated-contact effects can be replicated outside of the laboratory setting, as this validates multiple research avenues with which to study mediated contact, and it also lends credibility to the notion that mediated contact is an actual phenomenon that affects prejudice in the real world. The findings related to method may also suggest that mediated-contact effects require some degree of conscious awareness that may be harder to access in recall surveys. A crowded media environment may make survey research problematic due to challenges with recall and awareness, and researchers should attempt to measure exposure in more valid ways that are now possible through technological advances like digital footprint data.

Limitations

As with all studies, the current meta-analysis is not without limitations. All meta-analyses are constrained by the relevant research available to be included. One factor that limited the number of studies that met the inclusion criteria is the shift in focus that has occurred in the parasocial communication literature. Despite the explosion in parasocial studies over the past decade (for a narrative review, see Liebers & Schramm, 2018), the vast majority of contemporary studies examining parasocial interactions or parasocial relationships do not examine prejudice, but rather outcomes, like celebrity influence (e.g., Wen, 2017) or social media responses (e.g., Daniel & Westerman, 2017). A second factor limiting the studies included in the meta-analysis is the disparate research programs that emerged from intergroup contact. Several studies did not include an appropriate comparison group or control, and others were missing crucial information that the authors were unable to provide after being contacted.

In conclusion, mediated contact is a modern extension of Allport's (1954) contact hypothesis, which predicted that intergroup harmony could be facilitated by direct contact between opposing groups. Our meta-analysis demonstrated that Allport's ideas transfer well into mediated contexts. However, just as positive mediated contact can reduce prejudice, negative contact can increase prejudice. The effect sizes are not trivial, and viewers, as well as producers of media content, should be aware of how mediated contact can shape intergroup attitudes.

Supporting Information

Additional Supporting Information may be found in the online version of this article. Please note: Oxford University Press is not responsible for the content or functionality of any supplementary materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.

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